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Docket No. <u>1232-4797</u>

AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in this application.

Listing of Claims

Claims 1 - 10 (canceled)

Claim 11 (Original): An image reading apparatus comprising: a document feeder adapted to convey an original; an image sensor adapted to read the original conveyed to a platen by said document feeder; a controller adapted to control said image sensor to execute reading at a predetermined position a plurality of number of times without placing any original on the platen while driving an original convey member of said document feeder; an adder adapted to add for each pixel image data of the original convey member read the plurality of number of times; a memory adapted to store for each pixel the image data added by said adder; a determination unit adapted to determine a threshold value on the basis of the number of times of reading the original convey member and the image data stored in said memory; and a detector adapted to detect a presence/absence and position of dust and/or dirt on the platen on the basis of the threshold value and image data output from said image sensor without placing any original on the platen.

Claim 12 (Original): The apparatus according to claim 11, wherein when the image data has a value smaller than the threshold value, said detector determines that the dust or dirt is present.

Claim 13 (Original): The apparatus according to claim 11, wherein said determination unit determines the threshold value by subtracting a predetermined value from the image data

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stored in said memory.

Claim 14 (Original): The apparatus according to claim 11, wherein when the image data value stored in said memory is less than a specific value, said determination unit sets the threshold value to a predetermined value.

Claim 15 (Original): The apparatus according to claim 11 further comprising a resolution converter adapted to reduce a resolution of the image data output from said image sensor, wherein said adder adds the image data whose resolution is reduced by said resolution converter, and said memory has a capacity corresponding to the number of pixels of one line of the image data having the reduced resolution.

Claim 16 (Original): The apparatus according to claim 11 further comprising a grayscale converter adapted to reduce a grayscale level of the image data output from said image sensor, wherein said adder adds the image data whose grayscale level is reduced by said grayscale converter, and said memory has a capacity corresponding to the number of pixels of one line of the image data having the reduced grayscale level.

Claim 17 (Original): The apparatus according to claim 11, wherein when the dust or dirt is detected by said detector, said controller moves a position of said image sensor.

Claim 18 (Original): The apparatus according to claim 11, wherein the apparatus has a first reading mode in which a position of said image sensor is fixed, and the original is read

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while being conveying by said document feeder and a second reading mode in which the original

is stationarily held on the platen and read while moving said image sensor, and when the dust or

dirt is detected by said detector, said controller moves said image sensor to one of a plurality of

predetermined positions, and when the dust or dirt is detected by said detector at all of the

plurality of positions, said controller inhibits the first reading mode and sets the second reading

mode.

Claim 19 (Original): The apparatus according to claim 18 further comprising a

notification section adapted to notify a user of inhibition of the first reading mode.

Claim 20 (Original): The apparatus according to claim 18, wherein said controller

permits the first reading mode in accordance with removal of the dust or dirt on the platen.

Claim 21 (Original): The apparatus according to claim 11 further comprising an image

processing unit adapted to replace pixel data corresponding to a position of the detected dust or

dirt with pixel data of a pixel position adjacent to the position of the dust or dirt.

Claim 22 (Original): The apparatus according to claim 11 further comprising an image

processing unit adapted to replace pixel data corresponding to a position of the detected dust or

dirt with pixel data input for an immediately preceding pixel.

Claims 23 – 32 (Canceled)

Claim 33 (Original): A dust detection method in an image reading apparatus having a

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document feeder adapted to convey an original, and an image sensor adapted to read the original

conveyed to a platen by the document feeder, comprising: controlling the image sensor to

execute reading at a predetermined position a plurality of number of times without placing any

original on the platen while driving an original convey member of the document feeder; adding

for each pixel image data of the original convey member read the plurality of number of times;

storing for each pixel the added image data in a memory; determining a threshold value on the

basis of the number of times of reading the original convey member and the image data stored in

the memory; and detecting a presence/absence and position of dust and/or dirt on the platen on

the basis of the threshold value and image data output from the image sensor without placing any

original on the platen.

Claim 34 (Original): The method according to claim 33, wherein upon detecting the

presence/absence and position of dust and/or dirt, when the image data has a value smaller than

the threshold value, it is determined that the dust or dirt is present.

Claim 35(Original): The method according to claim 33, wherein the threshold value is

determined by subtracting a predetermined value from the image data stored in the memory.

Claim 36 (Original): The method according to claim 33, wherein when the image data

value stored in the memory is less than a specific value, the threshold value is set to a

predetermined value.

Claim 37 (Original): The method according to claim 33 further comprising reducing a

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resolution of the image data output from the image sensor, wherein upon adding the image data,
the image data having the reduced resolution is added, and the memory has a capacity
corresponding to the number of pixels of one line of the image data having the reduced
resolution.

Claim 38 (Original): The method according to claim 33 further comprising reducing a
grayscale level of the image data output from the image sensor, wherein upon adding the image
data, the image data having the reduced grayscale level is added, and the memory has a capacity
corresponding to the number of pixels of one line of the image data having the reduced grayscale
level.

Claim 39 (Original): A control method for the image reading apparatus which executes
the dust detection method of claim 33, wherein when the dust or dirt is detected, a position of the
image sensor is moved, and the dust detection method is repeatedly executed.

Claim 40 (Original): A control method for the image reading apparatus which executes
the dust detection method of claim 33, wherein the image reading apparatus has a first reading
mode in which a position of the image sensor is fixed, and the original is read while being
conveyed by the document feeder and a second reading mode in which the original is stationarily
held on the platen and read while moving the image sensor, and the method comprises: moving
the image sensor to one of a plurality of predetermined positions when the dust or dirt is
detected, and repeatedly executing the dust detection method, and inhibiting the first reading
mode and setting the second reading mode when the dust or dirt is detected at all of the plurality

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of positions.

      Claim 41 (Original): The method according to claim 40, characterized by further comprising notifying a user of inhibition of the first reading mode.

      Claim 42 (Original): The method according to claim 40, characterized by further comprising permitting the first reading mode in accordance with removal of the dust or dirt of the platen.

      Claim 43 (Original): An image processing method in the image reading apparatus which executes the dust detection method of claim 33, comprising replacing pixel data corresponding to a position of the detected dust or dirt with pixel data of a pixel position adjacent to the position of the dust or dirt.

      Claim 44 (Original): An image processing method in the image reading apparatus which executes the dust detection method of claim 33, comprising replacing pixel data corresponding to a position of the detected dust or dirt with pixel data input for an immediately preceding pixel.

      Claims 45 – 49 (Canceled)

      Claim 50 (Original): A computer program product comprising a computer usable medium having computer readable program code means embodied in said medium for a dust detection method in an image reading apparatus having a document feeder adapted to convey an

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original, and an image sensor adapted to read the original conveyed to a platen by the document

feeder, said product including: first computer readable program code means for controlling the

image sensor to execute reading at a predetermined position a plurality of number of times

without placing any original on the platen while driving an original convey member of the

document feeder; second computer readable program code means for adding for each pixel

image data of the original convey member read the plurality of number of times; third computer

readable program code means for storing for each pixel the added image data in a memory;

fourth computer readable program code means for determining a threshold value on the basis of

the number of times of reading the original convey member and the image data stored in the

memory; and fifth computer readable program code means for detecting a presence/absence and

position of dust and/or dirt on the platen on the basis of the threshold value and image data

output from the image sensor without placing any original on the platen.

      Claim 51 (Original): A computer program product comprising a computer usable

medium having computer readable program code means embodied in said medium for a control

method for the image reading apparatus which executes the dust detection method of claim 33,

said product including: first computer readable program code means for moving a position of the

image sensor when the dust or dirt is detected; and second computer readable program code

means for repeating the dust detection method.

      Claim 52 (Original): A computer program product comprising a computer usable

medium having computer readable program code means embodied in said medium for a control

method for the image reading apparatus which executes the dust detection method of claim 33,

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wherein the image reading apparatus has a first reading mode in which a position of the image

sensor is fixed, and the original is read while being conveyed by the document feeder and a

second reading mode in which the original is stationarily held on the platen and read while

moving the image sensor, said product including: first computer readable program code means

for moving the image sensor to one of a plurality of predetermined positions when the dust or

dirt is detected, and repeatedly executing the dust detection method, and second computer

readable program code means for inhibiting the first reading mode and setting the second reading

mode when the dust or dirt is detected at all of the plurality of positions.

Claim 53 (Original): A computer program product comprising a computer usable

medium having computer readable program code means embodied in said medium for an image

processing method in the image reading apparatus which executes the dust detection method of

claim 33, said product including: computer readable program code means for replacing pixel data

corresponding to a position of the detected dust or dirt with pixel data of a pixel position adjacent

to the position of the dust or dirt.

Claim 54 (Original): A computer program product comprising a computer usable

medium having computer readable program code means embodied in said medium for an image

processing method in the image reading apparatus which executes the dust detection method of

claim 33, said product including: computer readable program code means for replacing pixel data

corresponding to a position of the detected dust or dirt with pixel data input for an immediately

preceding pixel.

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